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ABSTRACT

This digest discusses the inclusion of "sustainability" concept in environmental education. Topics included are: (1) definiton of sustainability; (2) inclusion of the concept in the curriculum using interdisciplinary approaches; and (3) a list of instructional materials containing the concept at the elementary, secondary, and college levels. Seventeen references are listed. (YP)

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ENVIRONMENTAL EDUCATION FOR A SUSTAINABLE FUTURE

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ENVIRONMENTAL EDUCATION FOR A SUSTAINABLE FUTURE

Since the first Earth Day in 1970, significant shifts in perceptions of environmental priorities have occurred. Confrontation between environmentalists and those they have challenged is increasingly seen by "both sides" as counterproductive; it is generally accepted that reasoned concern about the environment is essential to good economics and planning. Dramatic increases in knowledge about the environment have revealed the necessity of applying information from all disciplines of the natural and social sciences to the solution of environment-related problems. A global perspective on "environment" has become pervasive (Botkin, et al., 1989, pp. xiii-xiv).

An emerging emphasis is on sustainability. Use of terms such as sustainable society, sustainable use, sustainable growth, sustainable resource development, and sustainable economic development is increasingly common. A recent issue of *Scientific American* (Clark, 1989) was devoted to scholarly analyses of the ramifications of this topic.

What does "sustainable" mean?

A sustainable society has been defined as "one that satisfies its needs without diminishing the prospects for future generations." (Brown and Wolf, 1988, p. 171). On the surface, the term sustainable use may appear to be an oxymoron. It must respond to these questions: "How can use of... (natural) resources possibly be made sustainable given present population levels and per capita demands?...Sustainable? For how long? By whom? Where?" (Ray, 1989, p. 82).

Talbot (1989, p. 26) has suggested that, to achieve sustainability, a set of transitions is needed: to stability in the world population; to sustainable and safe use of renewable resources; to the use of energy which is efficient and non-threatening to the biosphere; to the development and application of high technology in the service of environmental management and improvement; to a new economics supportive of sustainable resource management and environmental improvement; to sustainable, equitable economic development; to an integrated sense of the biosphere; to effective implementation of measures to conserve biological diversity.

"Sustainability" is not a new concept. Pinchot addressed it as the basis of the conservation movement of the early 1900s, pointing out that its three basic principles were: development and use of resources, prevention of waste, and the benefit of the many: "Conservation means the greatest good to the greatest number for the longest time." (Pinchot, 1910, pp. 42-50.)

What should be included in the school curriculum?

Bybee and Mau (1986) reported a survey which identified rankings of the most pressing global problems from the perspectives of 262 science educators from 21 countries. Among them were: world hunger and food resources, population growth, air quality and atmosphere, water resources, and human health and disease. These parameters are among those associated with sustainable development.
Respondents to the survey indicated that they:

(1) expected science and technology-related global problems to worsen; (2) were slightly to moderately knowledgeable about the problems; (3) believed that it was important to study global problems in the schools; (4) detected a trend toward teaching about science-technology- society;(5) believed that an integrated approach should be used to teach about environmental problems; and (6) saw public support for including the study of global problems in school curricula.

Social studies educators have indicated that issues rising from manipulation of the natural environment create problems due to the limited capacity of the natural environment to satisfy human needs (Woyach, 1984). They suggest that secondary school social studies courses should emphasize a conceptual framework for understanding, interpreting, and making and judging decisions about such issues. This framework should enable students to organize, interpret, and appraise information about the "limits to growth" debate, and about sustainable development of natural resources. The approach should help students develop an understanding of the social and political contexts of issues related to sustainability, and to develop a global perspective on them.

These reports indicate emerging emphases on the environment by both science educators and social studies educators, and imply a merging focus across their disciplines. Because environmental educators have traditionally stressed the need for integrated, interdisciplinary approaches to learning about the environment, they have developed conceptual bases and workable procedures to this end. Science educators have been encouraged to look to the experiences of environmental education for a research-and-practice base for their new emphases (Rubba, 1987); it appears that scholars and practitioners in the social studies also could benefit by doing so.

What materials exist for teaching about sustainability?

Roth (1987, pp. 129-138) has implemented a model for education for sustainable development in the contexts of both developed and developing nations. He identified four categories of interrelated conceptual underpinnings: biophysical, socio-cultural,

environmental management, and change. His 1987 paper presents applications in the non-formal sector in the Dominican Republic, and in the formal sector in Barbados.

Explicit curricular responses to emphases on sustainability are beginning to emerge in the formal education sector. Sustainability has sometimes been addressed in materials developed for global education, with emphases on the situations of developing nations. However, global education teaching materials typically emphasize political and economic aspects and pay less attention to environmental and natural resource realities. At post-secondary levels, texts for some college survey courses deal explicitly with sustainable development in a global context (for example, Botkin and Keller, 1987), but similar texts are not available for elementary-secondary levels.

Some elementary/secondary supplementary teaching materials targeted on sustainability have appeared, such as those developed by the Global Tomorrow Coalition (Holm, 1986). The Coalition's materials include five "Global Issues Education Packets"--Consider the Connections, Tropical Forests, Population, Marine and Coastal Resources, and Biological Diversity--for the intermediate grade/- middle school levels. Supplementary teaching materials with substantial environmental components which deal with sustainability include the:

(1) Minnesota curriculum guide focussing on "International Development in a Global Context" (Hoffman, 1988); (2) ERIC teaching activities volume directly addressing relationships between environment and global development (Mann and Stapp, 1982); (3) university-generated secondary school global issues activities and resource guide (Switzer, et al., 1987); (4) UNESCO-UNEP module on conservation and management of natural resources (UNESCO, 1986); and (5) An Arkansas resource handbook on teaching for global perspective (Roach, 1988).

Summary

In school settings, interdisciplinary content has no clearly identified curricular home, and is not seen to "fit" in settings which place a premium on disciplinary rigor. Also, educational leaders, curriculum planners, and textbook publishers have not placed priority on interdisciplinary topics.

Until educators supporting education about sustainability find ways to overcome these obstacles, education about sustainable development will be at best spotty. Those involved in environmental education and environmental studies appear to be in the best position to move it forward. An encouraging sign is the strong interest of science and social studies educators in topics relating to the environment. Perhaps education about sustainability will provide the mechanism for the development of interdisciplinary educational efforts across the natural and social sciences, with the environment at the focal point.

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